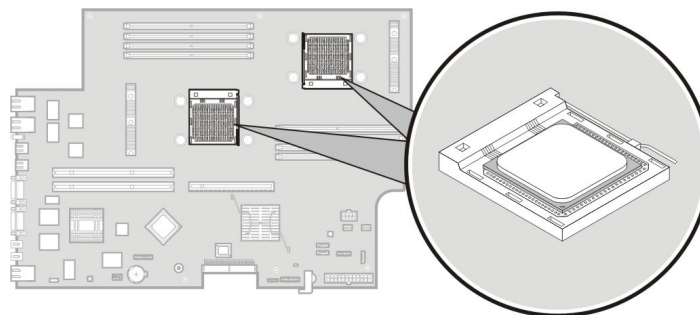# AMD Processor
Installation Instructions
for HP ProLiant DL145 Generation 2 Server

Read instructions completely before beginning installation procedure

Locating the Processor Socket

The location of the server's two AMD Opteron processor sockets (U11 and U22) is shown in the figure below.

Installation Guidelines

When installing a processor, observe the following important guidelines:

- Processor socket 1 (U22) must always be populated. If no processor is installed in this socket, the system will fail to boot and halt during POST. This error prevents the system from functioning properly.
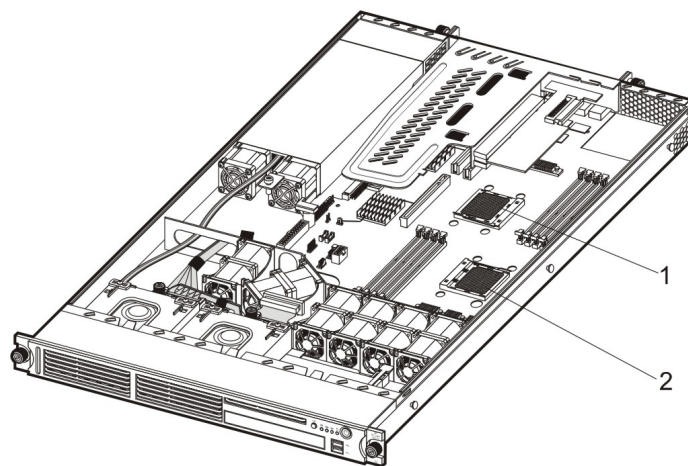
- Handle the processor and heat sink with care. Damage to either may affect processor performance.
- The pins beneath the processor are very fragile. Do not bend or damage them.
- Always use a new heat sink when replacing processors. Failure to use new components can cause damage to the processor.
- Be sure that the server has the most recent ROM version. Failure to flash the ROM before installing processors can cause system failure.

Configuring the Processor

NOTE: The procedures described in this document assume that the server is out of the rack and is positioned on a flat, stable surface.

IMPORTANT: Observe the pre- and post-installation procedures described in later sections when configuring the processor.

CAUTION: Follow the ESD precautions listed in Chapter 2 of the *HP ProLiant DL145 Generation 2 Server Maintenance and Service Guide* when handling the processor and heat sink. You can download a copy of this guide from the HP website at http://www.hp.com/.

WARNING: Failure to properly turn off the server before you open the server may cause serious damage as well as bodily harm.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the heat sink and the processor to cool before touching them.

CAUTION: To prevent the heat sink from tilting to one side during installation/removal procedures, observe a diagonally opposite pattern (an "X" pattern) when loosening and tightening the four spring-loaded screws.

Pre-installation Procedures

Perform the instructions below before removing or installing a processor.

1. Turn off the server and all the peripherals connected to it.
2. Disconnect the AC power cord from the power supply cable socket located on the server rear panel to eliminate the risk of electrical shock.
3. Remove the top cover.
4. If necessary, remove any accessory boards or cables that prevent access to the air duct.

Removing the Processor

1. Perform the pre-installation procedures described in the previous section.
2. Lift the air duct away from the processor sockets.
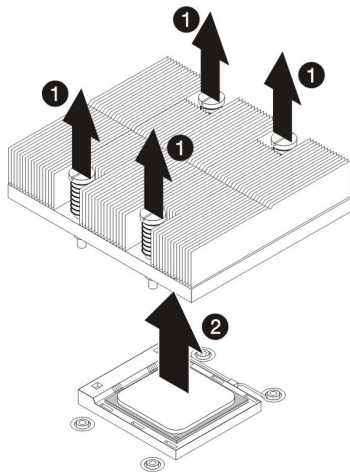   Keep it for reinstallation later.
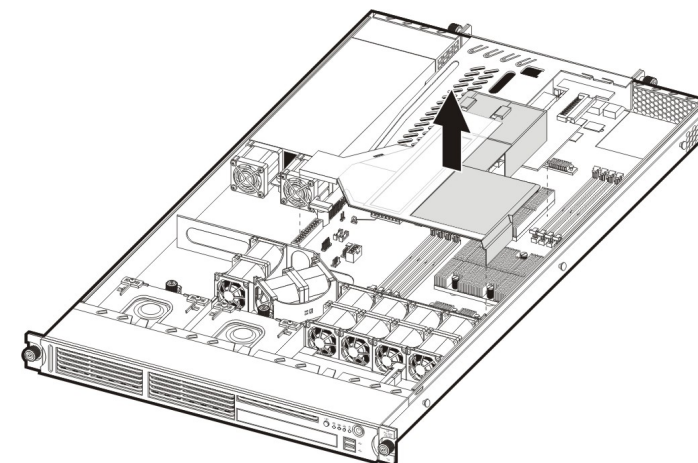
3. Locate the processor you want to remove.

4. Remove the heat sink:

   a. Loosen the four spring-loaded screws a few threads out, observing a diagonally opposite pattern, then loosen them completely to release the heat sink from the processor base.

   b. Lift the heat sink away from the system board.

5. Remove the processor:

   a. Disengage the socket retention lever from the processor base.

   b. Grasp the processor by its edges and lift it out of its socket.
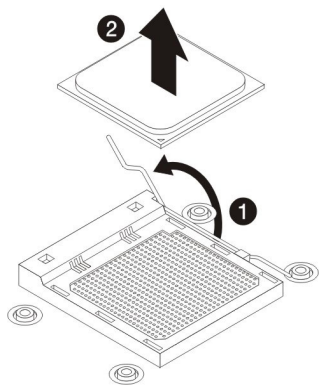

6. Place the processor on a static-dissipating work surface or inside an anti-static bag.

Installing the Processor

1. Perform steps 1 and 2 of the "Removing the Processor" section.

2. Locate an empty processor socket.

3. Disengage the socket retention lever from the processor base.

4. Install the processor:

   a. Hold the processor by its edges and align it over the empty processor socket.

   Make sure that pin 1 of the processor (indicated by the gold triangle on the corner) is properly aligned with hole 1 of the socket (indicated by a notch). The pins are keyed in such a way that you cannot install the processor in the wrong orientation without bending the pins.

   b. Insert the processor into the socket.

   c. Engage the socket retention lever back into place.
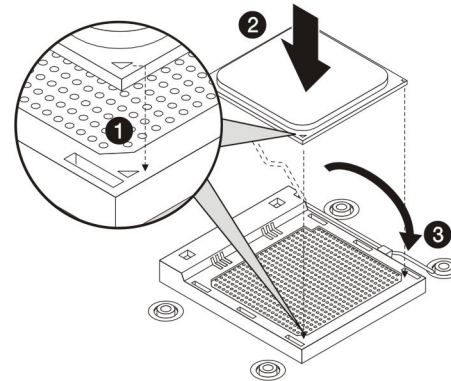
A heat sink must be installed for the processor to function properly. The heat sink model for your ProLiant server already has a thermal interface material pre-applied on the bottom protected by a plastic cover. Make sure that this material has no scratches or gaps. If it does have any scratches or gaps, contact your HP Customer Support provider for replacement.

> **CAUTION:** To prevent overheating or a possible system crash, use only a heat sink model specified for this ProLiant model.

5. Remove and discard the plastic cover protecting the thermal interface material.

   Be careful not to touch or scratch the thermal interface material.

6. Install the heat sink:

   a. Align then insert the heat sink on top of the processor.

> **CAUTION:** Do not over tighten the heat sink's spring-loaded screws to prevent them from breaking off. A maximum torque of 6 in-lb is set for the system.

   b. Tighten the four spring-loaded screws a few threads in, observing a diagonally opposite pattern, then tighten them completely to secure the heat sink to the processor base.
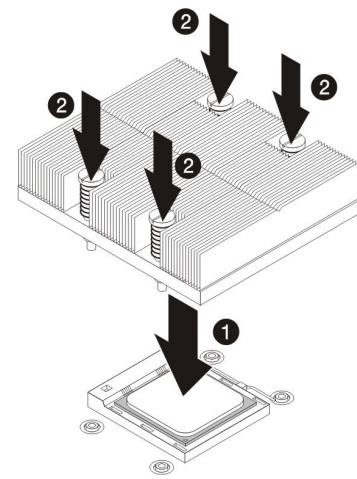
> **IMPORTANT:** If the heat sink is removed for any reason, it is critical that more thermal interface material be applied to the processor's integrated heat spreader in order to ensure proper thermal bonding between the processor and the heat sink. Clean the contact surface of both the processor and heat sink with an alcohol pad, and re-apply a thin layer of an HP approved thermal interface material before re-installing the processor. HP recommends using ShinEtsu G751 thermal grease compound for the ProLiant server.

7. Reinstall the air duct in its place.
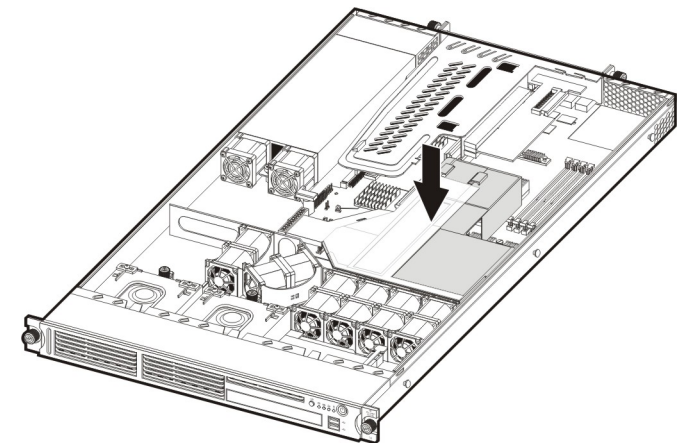
8. Perform the post- installation procedures described in the next section.

Post-installation Procedures

Perform the instructions below after removing or installing a processor.

1. Be sure all components are installed according to the described step-by-step instructions.

2. Check to make sure you have not left loose tools or parts inside the server.

3. Reinstall any expansion board(s), peripheral(s), board cover(s), and system cable(s) that have previously been removed.

4. Reinstall the top cover.

5. Connect all external cables and the AC power cord to the system.

6. Press the power button ⏻ on the front panel to turn on the server.